J. S. THOMPSON & J. BAST.
MACHINE FOR CASTING.
APPLICATION FILED OCT. 28, 1916.

1,294,572.

Patented Feb. 18, 1919.
3 SHEETS—SHEET 1.

Fig. 2.

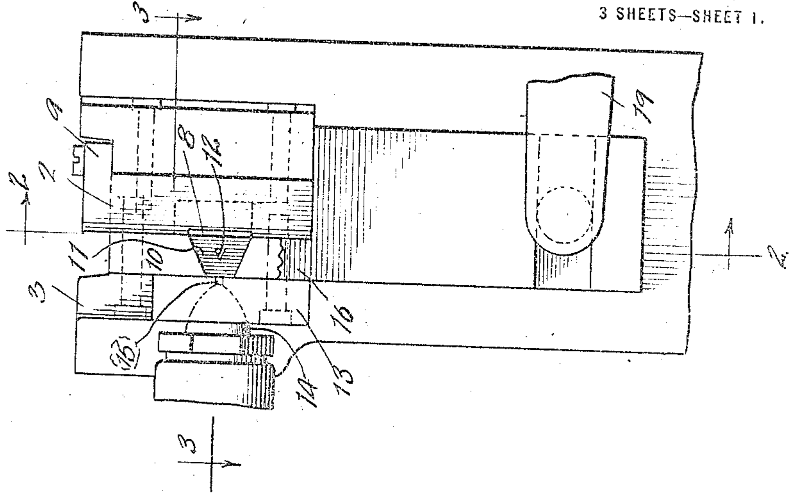
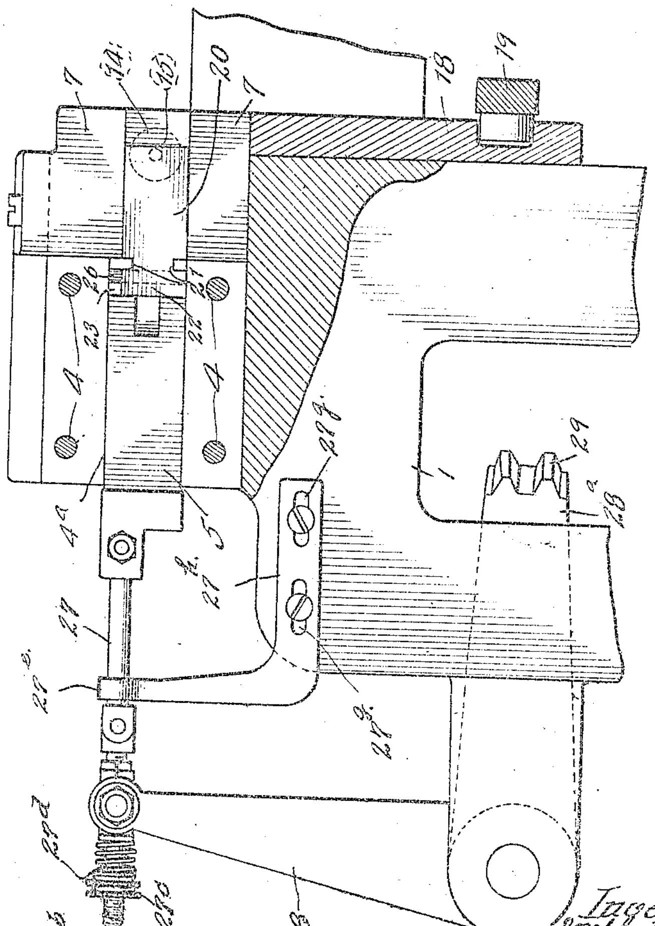


Fig. 1.



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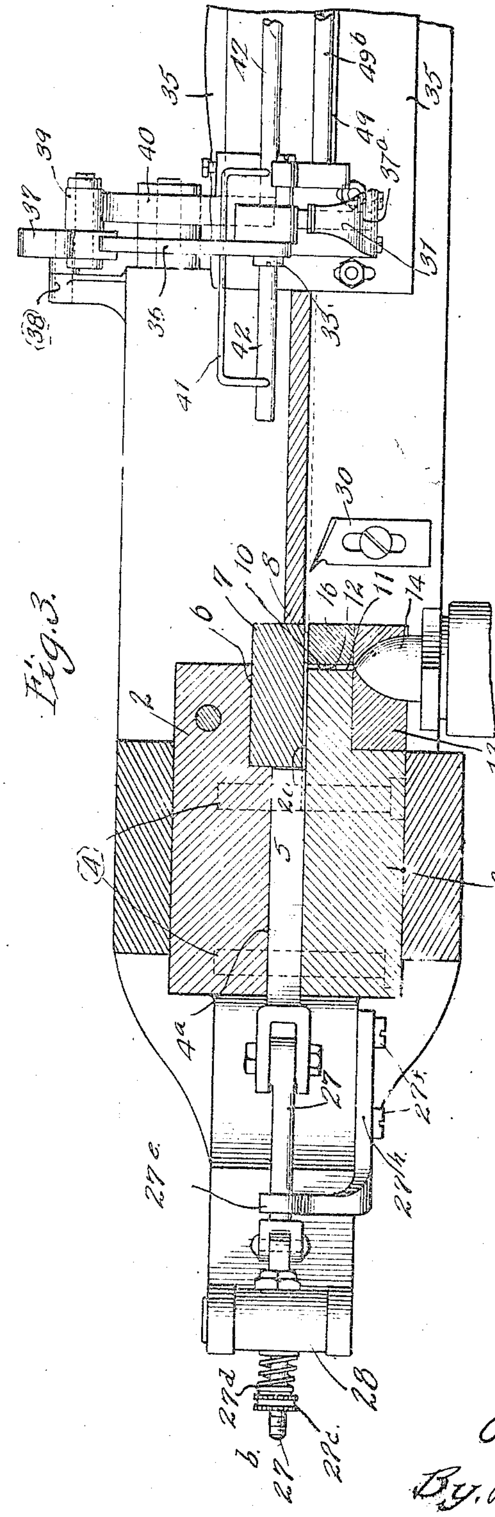

Fig. 3.

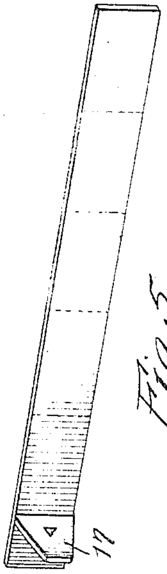

Fig. 6.

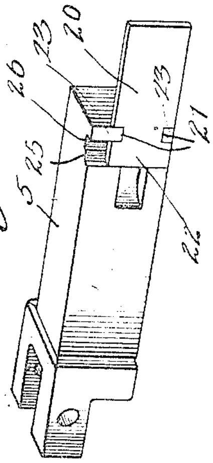

Fig. 5.

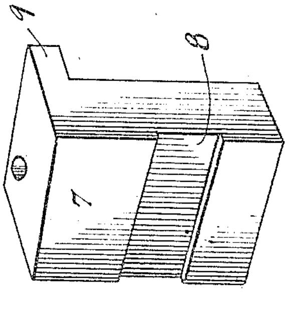

Fig. 4.

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Fig 7

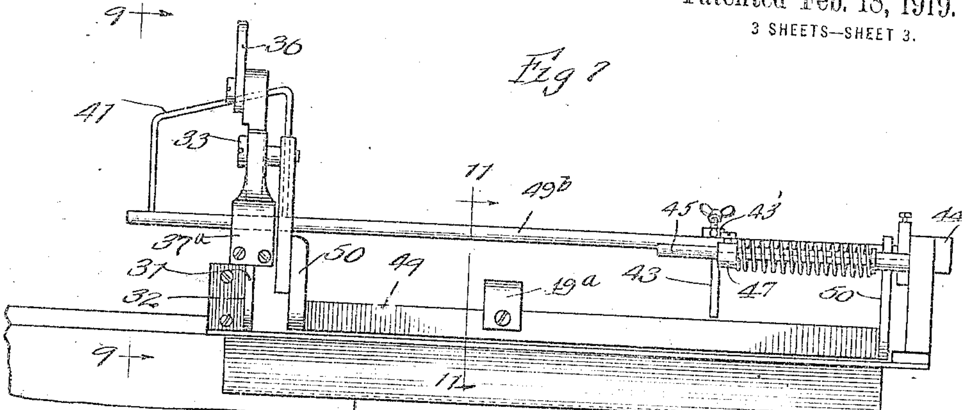


Fig. 8

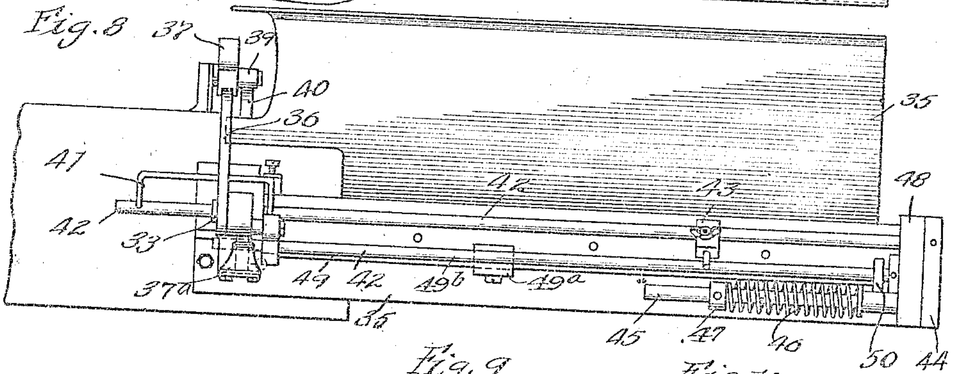


Fig. 9.

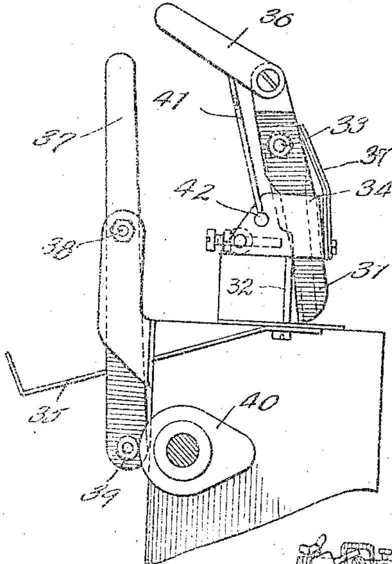


Fig. 10

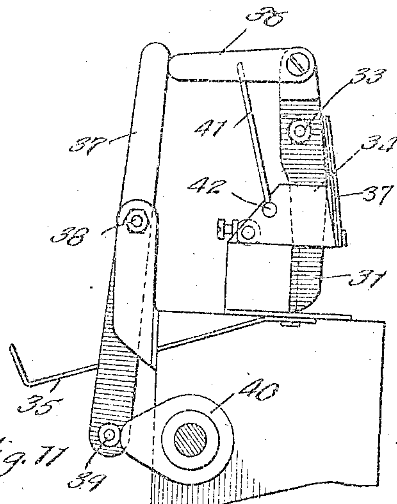
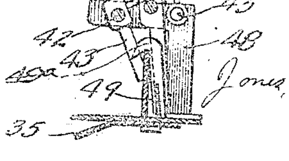


Fig. 11



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UNITED STATES PATENT OFFICE.

JOHN S. THOMPSON AND JOSEPH BAST, OF CHICAGO, ILLINOIS, ASSIGNORS TO THOMPSON TYPE MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MACHINE FOR CASTING.

1,294,572. Specification of Letters Patent. Patented Feb. 18, 1919.

Application filed October 28, 1916. Serial No. 128,342.

To all whom it may concern:

Be it known that we, JOHN S. THOMPSON and JOSEPH BAST, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Machines for Casting, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

Our invention relates to improvements in machines for casting continuous strips of material for use in the printing art, which strips are cast in a series of sections or molds, each section or mold fusing with the next preceding cast in order to make one continuous strip.

One of the objects of our invention is to provide a machine which shall so cast the sections that the fusing of the sections together will be accomplished in a more satisfactory manner. Another object of our invention is to provide means for cutting the strips into predetermined lengths. For the purpose of disclosing our invention, we have illustrated in the accompanying drawings one of the embodiments thereof. In said drawings—

Figure 1 is a side elevation of a machine embodying our invention, partially in section;

Fig. 2 is a partial end view thereof;

Fig. 3 is a top plan view showing a portion of the mold in section;

Fig. 4 is a perspective view of the removable member of the mold body;

Fig. 5 is a perspective view of the ejector body piece and pusher member;

Fig. 6 is a perspective view of the strip as it comes from the mold, the left hand showing the strip after the jet pieces have been sheared or removed therefrom;

Fig. 7 is a side elevation of the cutter;

Fig. 8 is a plan view thereof;

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 7;

Fig. 10 is a similar view with the cutter operated; and

Fig. 11 is a sectional view on the line 11—11 of Fig. 7.

In the machine illustrated, we provide a suitable base or support 1 of any character, on which is mounted the mold and other parts of the machine. This mold in the present instance consists, respectively, of the two mold blocks 2 and 3, the vertical faces of which fit closely together, being held together by the bolts or screws 4. The block 2 intermediate of its top and bottom is channeled out, as at 4ª, to receive the pusher plate or pusher member 5. The front portion of the block is recessed, as at 6, to receive the mold block 7. This block consists, as shown in Fig. 4, of a solid block of metal having extending along its front face a channel or mold cavity 8. The block has a laterally extending flange 9 which fits over the side block 2 and which comprises a means for suitably bolting the mold block in position. The mold cavity 8 forms the cavity in which the molten metal is forced, and, as it will be seen, is open from end to end. A portion of the mold block 7 abuts up against the flat face of the side block 3, so that this flat face forms one wall of a portion of the mold cavity. This block is removably mounted in position in order that it may be changed, the mold blocks having different sized and shaped mold cavities so that different sized and shaped mold cavities may be substituted, due to the removability of the blocks, for the one illustrated. The front face 10 of the side block 3 is recessed to form a jet opening 11. This jet opening as shown in Fig. 2 is substantially V-shaped, the narrow portion of the opening being toward the jet nozzle and the wider portion opening into the mold cavity 8. At the central portion there is provided a small V-shaped or other shaped spreader 12, for spreading the molten metal as it is forced through the jet opening. In front of the jet opening and adjacent the block 3 is a jet block 13 in which fits the nozzle 14 through which the molten metal is forced, this nozzle connecting with the molten metal port 15. Vertically movable along that portion of the mold cavity 8 not covered by the side block 3 is a reciprocating cover 16, which during the molding operation is raised and covers the exposed portion of the mold cavity 8, and which during the moving period of operation of the machine is lowered to permit the passage of the jet casting 17 formed on the strip. This cover is mounted upon a reciprocating member 18, which is driven by a lever 19 operating from suitable cam mechanism. After each cast is made, the cast is forced out of the mold cavity 8 by means of the body piece 20, which is removably connected with the pusher member 5. This body piece is of the same width and thickness as the mold cavity 8 and reciprocates therein. In fact, the rear end of this body piece forms one wall of the mold cavity. The rear end of the body piece is provided with a pair of notches 21, whereby a restricted neck 22 is formed therein. This neck fits in a notch formed between a pair of lugs 23 on the side face of the pusher member 5 and the rear end 24 of the body piece lies in a suitable recess 25 in the pusher member. This recess is, as shown, stepped in depth, so that in the event a thicker or deeper body piece is used, the rear end is shortened and will fit down in the deeper portion 26 of the recess. The rear end of the pusher member 5 is connected by connecting rod 27 with a rocking arm 28 driven with a bell crank arm 28^{a}, the opposite end of which is geared, as at 29, and is adapted to mesh with a suitable driving gear so that the arm will be operated to reciprocate the pusher member 5.

The rear end of the rod 27 is pivotally connected with a bolt 27^{b}, passing through the arm 28 and having on its end a thumbnut 27^{c}, between which and the arm 28 is mounted a coiled spring 27^{d}. The rod 27 also passes through a stop 27^{e} which is secured to the frame by screws 27^{f} passing through slots 27^{g} in the horizontal arm 27^{h} of the stop 27^{e} and into the frame of the machine. The rear end of the pusher member 5 strikes against the stop 27^{e} and its stroke is limited thereby. Thus, by adjusting the stop 27^{e}, the length of the casting may be varied. By providing the resilient connection between the arm 28 and the bolt 27^{b}, the pusher member, and with it the body piece 20, may be stopped at any point by the stop 27^{e} and without the necessity of varying the adjustment or varying the throw of the arm 28.

It will be noted that the mold cavity is so arranged that the side thereof is at right angles to the jet opening, so that the molten metal is forced into the cavity at an angle to the width of the cavity intermediate the edge walls thereof. By this arrangement the molten metal will more quickly come in contact with the edge of the cast previously made, tending to melt this edge and cause the two sections to fuse together. We have found from experience that where the metal is introduced into the mold cavity from what might be termed the edge thereof, the molten metal in flowing along the edge of the previous cast is chilled before it gets to the complete end of its movement and that the complete fusing of the metal is not apt to result.

In operation of the machine, we will assume that one cast has been made and that the same has been pushed until it is in the position illustrated in Fig. 3 of the drawing, that is, it is in a position where its rear edge is slightly beyond the front edge of the block 3, so that the jet cavity 11 communicates with the mold cavity 8; the cover plate 16 is raised in its position to hold the cast flat in a forward portion of the mold cavity and the body piece 20 is retracted to the extreme rearward movement of its stroke, leaving the mold cavity open; the hot molten metal is pumped from the pot through the nozzle 14 and passes through the jet cavity into the mold cavity, the metal being spread and deflected by the deflector 12 in the jet cavity. It will be seen that the rear edge of the preceding cast forms a front wall of the mold cavity and the front edge of the body piece 20 forms the rear wall of the mold cavity. The metal enters the mold cavity at right angles to the width of the same so that it strikes all parts of the rear edge of the first front cast substantially simultaneously, the metal having had no chance to cool or be cooled. It slightly melts the rear edge of the preceding cast and intimately fuses therewith. After the mold cavity has been completely filled, the metal almost immediately sets and the cover plate 16 moves downward to a point below the bottom of the mold cavity. The body piece then commences its forward movement and the cast thus made is moved forward, the jet cast being carried forward with the cast. As soon as the body piece has moved to the forward limit of its stroke, it commences its return movement, and at the same time the cover plate moves up so that by the time the body piece has reached its rearward end of the stroke, the parts are in position for another cast.

The jet piece 17 may be removed in any desired manner. One way of removing the same is accomplished by providing a stationary knife 30 against which it is forced during the forward progress of the cast strip and which shears it off of the strip.

The strip cast is cut off in definite lengths by means of the cutter at the right-hand end of the machine. This cutter comprises a movable blade 31 operating against a knife-edge 32, and between which the strip is adapted to pass as it feeds out of the casting mold. The movable blade is pivoted at 33 on a suitable supporting block 34, which, together with the receiving pan 35 for the strips, is secured to the frame of the machine. The upper end of the blade has pivoted thereto a striking dog 36, by which the knife is rocked on its pivot 33 in a direction to shear the strip. For operating the knife I provide an operating lever 37 pivoted at 38 to the frame and having at its lower end a roller 39 bearing on a cam 40 mounted on the frame of the machine and adapted to be rotated by the operating mechanism of the machine. It will be seen that as this cam rotates the upper end of the arm 37 is thrown inward, and, when the dog 36 is in the path of the arm, the arm strikes the same, moving the knife toward the cutting edge 32 to make the shear, the knife being returned to normal position by a spring 37^a bearing thereon above its pivot point. This dog 36 is held in its raised position by means of a cam 41, preferably taking the form of a wire frame, the upper end of which is inclined, as shown, to form a cam surface, and mounted on a reciprocating rod 42. This rod is provided with an adjustable finger 43 adapted to be engaged by the end of the strip as it feeds out from the machine. The rod at its rear end is secured to a cross-member 44, which is also connected to a rod 45 and held in its retracted position by means of a coiled spring 46 interposed between a stationary collar 47 on the rod 45 and the support 48.

In operation, the length of casting to be made is set by the stop 27^c, and this, together with the finger 43, which may be adjusted to various positions, determines the length of the strip to be cut. The finger 43 being placed at the desired point, as the strip feeds out from the mold one end eventually strikes this finger, forcing the same back and carrying with it the cam 41, which allows the dog 36 to drop in the path of the arm 37, and as the cam 40 moves the arm 37 to the innermost position during the molding operation, the dog 36 and the blade 31 will be moved to shear the strip during the interval when the strip is at rest while an additional casting is being made. At the same time that the knife 31 is rocked on its pivot, the kicker 49, mounted on a pair of arms 50, one of which is pivoted to the support 48 and the other secured to the pivot 33 to rock therewith, will kick the sheared strip out into the pan 35.

The kicker 49 is provided with a hook-shaped guide 49^a which engages over the top of the metal strip during its forward movement to hold it in upright position, and a rod 49^b connects the two arms 50 together.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is—

1. A machine for casting in a plurality of undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one movable wall and one wall formed by the previously made casting, and means for introducing molten metal into the mold cavity at right angles to the width of the same.

2. A machine for making a continuous casting, comprising means for holding molten metal in engagement with a solidified portion of the casting, said holding means having a recess having two longitudinally extending edge walls, and means for introducing molten metal within said recess at right angles to the width of the same and at a point intermediate said edge walls.

3. A machine for making a continuous casting, comprising means for holding molten metal in engagement with a solidified portion of the casting, said holding means having a recess having two longitudinally extending edge walls, and means for introducing molten metal within said recess at right angles to the width of the same and at a point intermediate said edge walls and adjacent said solidified portion.

4. A machine for making a continuous casting, comprising a mold having a recess in which the metal solidifies having two longitudinally extending edge walls, said recess being open at one end for the exit of the solidified metal, means to hold the solidified metal in position to be engaged by the molten metal, means for introducing molten metal within said recess at right angles to the width of the same and at a point intermediate said edge walls and adjacent said solidified portion, and a plunger for ejecting the solidified metal from said recess.

5. A machine for making a continuous casting, comprising means for holding molten metal in engagement with a solidified portion of the casting, said holding means comprising a readily detachable block, having a recess therein, the walls of which form part of the mold cavity, whereby said block can be readily removed and a block having a cavity of a different size substituted.

6. A machine for making a continuous casting, comprising means for holding molten metal in engagement with a solidified portion of the casting, said holding means comprising a readily detachable block having a recess therein, the walls of which form part of the mold cavity whereby said block can be readily removed and a block having a cavity of a different size substituted, a plunger member and an ejector member readily detachable from said plunger member, for ejecting the solidified metal from said recess.

7. A machine for casting in a plurality of undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one wall formed by the previously cast portion and having a jet orifice extending substantially from top to bottom of the mold cavity, and means for introducing the molten metal at substantially the center of said orifice so as to force the metal simultaneously against the edge of the previously cast portion.

8. A machine for casting in a plurality of

undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one wall formed by the previously cast portion and having a jet orifice extending substantially from the top to the bottom of the mold cavity, and means for spreading the molten metal as it enters said cavity to cause it to simultaneously strike substantially the entire edge of the previously cast portion and to fuse therewith.

9. A machine for casting in a plurality of undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one wall formed by the previously cast portion and having a V-shaped orifice at right angles to the mold cavity for spreading the metal as it enters the mold into simultaneous contact with the edge of the previously cast portion.

10. A machine for casting in a plurality of undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one wall formed by the previously made casting, and means for introducing the metal into the mold cavity transversely to the width thereof.

11. A machine for casting in a plurality of undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one wall formed by the previously made casting and having a jet orifice for the introduction of the molten metal, and means for moving the cast portion of the strip having the jet casting attached thereto out of the mold cavity with the jet casting propelled only by the strip.

12. A machine for casting in a plurality of undivided castings a continuous strip of material, comprising a mold cavity for an individual casting having one wall formed by the previously made casting and having a jet orifice for the introduction of molten metal, and means for moving the jet casting from the jet orifice by the expulsion of the strip from the mold cavity.

In witness whereof, we have hereunto subscribed our names.

JOHN S. THOMPSON.
JOSEPH BAST.